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HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

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EL CHANTI, HUSSEIN A	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/687,997
Filing Date: October 17, 2003
Appellant(s): SHEN ET AL.

John Wagner (Reg. No. 35,398)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 23, 2008 appealing from the Office action mailed Jan. 25, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Vahalia et al. U.S. Patent No. 5,933,603 (August 3, 1999)

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-7 and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Vahalia et al., U.S. Patent No. 5,933,603 (referred to hereafter as Vahalia).

As to claim 1, Vahalia teaches a network proxy server "file server 20", comprising:

a network connection configured to receive content-object requests generated by a plurality of clients, said content-object requests requesting a content-object from a server of clients (see col. 2 lines 50-67, stream servers intercept and service client requests on behalf of the file server);

a plurality of moving window buffers “stream RAM servers 91-94” coupled with said network connection, said plurality of moving-window buffers being configured to service said content-object requests (see col. 23 lines 1-46, each server has a portion of the movie and each client has a sliding window); and

first and second content buffers coupled with said network connection, said first content buffer being configured to duplicate a first portion of a content passing from said server to said plurality of clients, cache said first portion, and provide said first portion to a subsequent client in response to a request for said first portion, and said second content buffer being configured to duplicate a second portion of said content and cache said second portion, and wherein said first and second content buffers are further configured to simultaneously provide said first and second portions of said content to said subsequent client in response to a request for said first and second portions (see col. 23 lines 1-col.24 lines 63, each video is cached on a plurality of servers, some

portions may be duplicated on a plurality of servers and load balancing is used to service a plurality client requests).

As to claim 2, Vahalia teaches a system of delivering objects from servers to clients comprising:

receiving a first request for an content object from a first client (see col. 18 lines 24-56, client sends a request for a movie which is fetched as objects on a stream server);

allocating a first running buffer (see col. 18 lines 62-col. 19 lines 32, a cache slot in a buffer server is allocated to fetch the requested segment);

retrieving the content object as a datastream having a start point and inserting the datastream into the first buffer while delivering the same datastream to the first client (see col. 19 lines 28-31 and col. 18 lines 24-35, the requested object with relative start times are downloaded to the cache slot in the server);

when the first buffer is filled, deleting data from the start point of the datastream while continuing to insert retrieved data into the buffer, so that the buffer contains a moving window of the retrieved data (see col. 18 lines 24-56, the objects are fetched until the buffer is full and then starts rewriting data in the buffer that is already streamed to the client);

receiving a second request for the content object from a client (see col. 21 lines 25-34, a new request is received);

if the second request is received while the start point of the datastream is still in the first buffer, serving the content object directly from the first buffer (see col. 21 lines 44-57, if the request falls within the objects that are fetched, then the request is serviced); and

if the second request is received after the start point has been deleted from the first buffer, retrieving the portion of the content object that has been deleted from the first buffer, commencing from the start point, and delivering the same as a datastream while simultaneously delivering a different part of the content object from the first buffer (see col. 22 lines 27-37, if the request falls behind the existing stream, the requested objects are cached and delivered to the second client while simultaneously delivering the stream to the first client).

As to claim 3, Vahalia teaches the system of claim 2, further comprising, allocating a second running buffer and inserting the datastream representing the portion of the content object not in the first running buffer into the second running buffer while delivering the same datastream (see col. 22 lines 27-37, the buffer space is allocated until it catches up with the first buffer).

As to claim 4, Vahalia teaches the system of claim 3 further comprising for a third request for the content object received after the second running buffer has been allocated;

checking whether the start point is cached in an existing running buffer (see col. 24 lines 3-43);

if the start point is cached in an existing running buffer, serving the content object as a datastream from each of the running buffers simultaneously (see col. 24 lines 3-43, the requested objects are searched in all the available buffer servers);

if the start point is not cached in an existing running buffer, allocating a third running buffer (see col. 24 lines 44-63;

retrieving the portion of the content object not in an existing running buffer as a datastream and inserting the datastream into the third running buffer while delivering the same datastream and simultaneously delivering a different part of the content object from other existing running buffers (see col. 24 lines 44-63, if the requested object is not found, then buffer space is allocated to fetch the requested objects).

As to claim 5, Vahalia teaches the system of claim 2, wherein the first buffer or another buffer has a size that is determined as a proportion of an advertised length of the content object (see col. 21 lines 59-col. 22 lines 22, the size of the requested object is compared to the available free space in the cache server).

As to claim 6, Vahalia teaches the system of claim 2, further comprising: modifying the size of the first buffer or another buffer in response to an analysis of frequency of requests for the content object, in order to optimize allocation of memory (see col. 25 lines 6-62, more popular movies or objects are duplicated while less popular movies are removed).

As to claim 7, Vahalia teaches the system of claim 2, further comprising, prior to allocating the first buffer or another buffer, applying a replacement algorithm to reclaim

buffers from less frequently requested objects (see col. 25 lines 6-62, more popular movies or objects are duplicated while less popular movies are removed).

As to claim 9, Vahalia teaches a computer data storage media having stored thereon software performing the following functions:

receiving a first request for an content object (see col. 18 lines 24-56, client sends a request for a movie which is fetched as objects on a stream server);

allocating a first running buffer (see col. 18 lines 62-col. 19 lines 32, a cache slot in a buffer server is allocated to fetch the requested segment);

retrieving the content object as a datastream having a start point and inserting the datastream into the first buffer while delivering the same datastream (see col. 19 lines 28-31 and col. 18 lines 24-35, the requested object with relative start times are downloaded to the cache slot in the server);

when the first buffer is filled, deleting data from the start point of the datastream while continuing to insert retrieved data into the buffer, so that the buffer contains a moving window of the retrieved data (see col. 18 lines 24-56, the objects are fetched until the buffer is full and then starts rewriting data in the buffer that is already streamed to the client);

receiving a second request for the content object (see col. 21 lines 25-34, a new request is received);

if the second request is received while the start point of the datastream is in the first buffer, serving the content object directly from the first buffer (see col. 21 lines 44-57, if the request falls within the objects that are fetched, then the request is serviced);

if the second request is received after the start point has been deleted from the first buffer: retrieving the portion of the content object that has been deleted from the first buffer, commencing from the start point, and delivering the same as a datastream while simultaneously delivering a different part of the content object as a datastream from the first buffer (see col. 22 lines 27-37, if the request falls behind the existing stream, the requested objects are cached and delivered to the second client while simultaneously delivering the stream to the first client).

As to claim 10, Vahalia teaches the computer data storage media of claim 9, wherein the software performs the following further functions:

if the second request is received after the start point of the datastream has been deleted from the first buffer, allocating a second running buffer and inserting the datastream representing the portion of the content object not in the first running buffer into the second running buffer while delivering the same datastream (see col. 22 lines 27-37, the buffer space is allocated until it catches up with the first buffer).

As to claim 11, Vahalia teaches the computer data storage media of claim 9, wherein the software performs the following further functions:

receiving a third request for the content object after the second running buffer has been allocated; checking whether the start point is cached in an existing running buffer (see col. 24 lines 3-43);

if the start point is cached in an existing running buffer, serving the content object as a datastream from each of the running buffers simultaneously (see col. 24 lines 3-43, the requested objects are searched in all the available buffer servers);

if the start point is not cached in an existing running buffer:

allocating a third running buffer; retrieving the portion of the content object not in an existing running buffer as a datastream and inserting the datastream into the third running buffer while delivering the same datastream and simultaneously delivering a different part of the content object as a datastream from other existing running buffers (see col. 24 lines 44-63, if the requested object is not found, then buffer space is allocated to fetch the requested objects).

As to claim 12, Vahalia teaches the computer data storage media of claim 9, wherein the software performs the following further functions: determining the advertised length of the content object; setting the size of the first buffer or another buffer as a proportion of an advertised length of the content object (see col. 21 lines 59-col. 22 lines 22, the size of the requested object is compared to the available free space in the cache server).

As to claim 13, Vahalia teaches the computer data storage media of claim 9, wherein: analyzing frequency of requests for the content object; and modifying the size

of the first buffer or another buffer in response to the analysis of the frequency of requests for the content object in order to optimize allocation of memory (see col. 25 lines 6-62, more popular movies or objects are duplicated while less popular movies are removed).

As to claim 14, Vahalia teaches the computer data storage media of claim 9, wherein: prior to allocating the first buffer or another buffer checking if memory is available; if there is not enough memory available to allocate a buffer, applying a replacement algorithm to reclaim buffers from less frequently requested objects (see col. 25 lines 6-62, more popular movies or objects are duplicated while less popular movies are removed).

Claims 8 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(10) Response to Argument

As per appellants arguments filed on May 23, 2008, the appellant argues that Vahalia does not disclose a proxy server comprising a plurality of moving window buffers including a first and second moving window providing simultaneous content to a client (see Brief page 11 lines 5-13, argument A)

In reply to A, Vahalia teaches a system and method for providing video data from a plurality of stream server to a plurality of clients based on client requests (see abstract). Vahalia teaches the system includes a video file server 20 which is interpreted to be "network proxy server". The file server 20 comprises a plurality of

stream servers 21 wherein the stream servers are installed within the file server 20 as a single machine (see fig. 1 and col. 5 lines 5-57). Each of the stream servers may simultaneously store a portion of a requested movie. For example, a movie may be divided into four portions and each of the portions is stored in the RAM of four stream servers (see fig. 16 and col. 22 lines 60-col. 23 lines 46). Each of the stream server functions as a buffer to store a portion of requested data in the RAM where multiple stream servers store portions of the requested content at the same time. Also the portions that the stream servers store are obtained from the cache memory 41 of the file server 20. Since the stream servers store portions of the content and the stream servers function as a buffer to service the requested content to the clients, examiner interprets the stream servers including the example of the four stream servers in fig. 16 to be "plurality of moving window buffers including a first and second moving window".

In addition, even if the stream servers where separate devices from the video file server, the claim language does not necessitate that the buffers are on the proxy server. Therefore the buffers may be installed external to the proxy server or even remotely located from the proxy server but being in communication with the proxy server.

In the example illustrated above, four servers store four portions of the video wherein each portion is steamed to the client in order. If it is determined that the next frame to be streamed to the client is stored on a second server, then the second server starts streaming the requested portion. Since 1) all the portions are already stored on the four servers, 2) each of the servers is ready to start transmitting the frame as soon as a request is received from the client, and 3) no additional configuration or

downloading is required to download an additional portion when the request is received; therefore the buffers are "configured" to simultaneously provide a first and second portion as claimed.

Appellant argues that Vahalia does not disclose retrieving the content object as a datastream while delivering the datastream to the client and deleting data from the start point of the datastream while continuing to insert retrieved data into the running buffer (see Brief page 12 lines 15-page 14, argument B)

In reply to B, Vahalia teaches that each steam server has a window that stores a portion of the movie. The data is sent to the client a rate. At the same time, the oldest data in the window is deleted and new data is added from the video server at the same rate that data is being streamed to the client (see col. 23 lines 1-10). Therefore, the stream server delivers a stream of data to the client "delivering the datastream to the client" and at the same time download data to the RAM of the stream server "retrieving the content object as a datastream" and also deletes the oldest data from the RAM and continue to download data at the same rate that it is being streamed to the client. Therefore, the deletion rate of the oldest data is the same as the download data rate of the new data "deleting data from the start point of the datastream while continuing to insert retrieved data into the running buffer".

Appellant argues that Vahalia fails to teach the limitations of claims 3-7 and 10-14 since Vahalia fails to teach the limitations of claims 1 and 2 (see Brief page 15, argument C)

In reply to C, Vahalia teaches the limitations of claims 1 and 2 as illustrated above and therefore Vahalia teaches the limitations of claims 3-7 and 10-14.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Hussein Elchanti/

July 15, 2008

Conferees:

/Ario Etienne/

Supervisory Patent Examiner, Art Unit 2157

/Salad Abdullahi/

Primary Examiner, Art Unit 2157